

WHAT IS CLAIMED IS:

1. A semiconductor storage device comprising:
a nonvolatile memory to which data is written in a sector unit; and
a data rewriting unit rewriting data in the nonvolatile memory,
wherein
5 each sector in said nonvolatile memory includes: a data area into
which data is stored; and a refresh mark into which information indicative
of whether refresh has been performed or not is stored, and
said data rewriting unit includes a refresh execution unit referring to
said refresh mark and determining whether the sector is refreshed or not,
10 thereby executing the refresh.
2. The semiconductor storage device according to claim 1, wherein
said data rewriting unit further includes a refresh zone detection
unit dividing a block of said nonvolatile memory into refresh zone units for
executing refresh, and detecting the refresh zone including a sector of a
5 writing target, and
said refresh execution unit refreshes the sector included in the
refresh zone detected by said refresh zone detection unit every time data is
written to a sector.
3. The semiconductor storage device according to claim 2, wherein
every time data is written to a sector, said refresh execution unit
sequentially refreshes the sectors included in the refresh zone detected by
said refresh zone detection unit, starting at a head sector or a final sector,
5 and sets a first value in the refresh mark included in the sector, and
after completion of the refreshes for all the sectors included in said
refresh zone, every time data is written to a sector, said refresh execution
unit sequentially refreshes the sectors included in the refresh zone detected
by said refresh zone detection unit, starting at the head sector or the final
10 sector, and sets a second value different from the first value in the refresh
mark included in the sector.

4. The semiconductor storage device according to claim 1, wherein
said data rewriting unit further includes a refresh zone detection
unit dividing a block of said nonvolatile memory into refresh zone units for
performing refresh, and detecting the refresh zone including a sector of a
writing target, and

5 said refresh execution unit refreshes the sectors included in the
refresh zone, every time data is written to a sector in the refresh zone
detected by said refresh zone detection unit for a predetermined number of
times.

5. The semiconductor storage device according to claim 4, wherein
every time data is written to the sector in the refresh zone detected
by said refresh zone detection unit for the predetermined number of times,
said refresh execution unit sequentially refreshes the sectors included in
the refresh zone, starting at a head sector or a final sector, and sets a first
value in the refresh mark included in the sector, and

after completion of the refreshes for all the sectors included in said
refresh zone, every time data is written to the sector in the refresh zone for
the predetermined number of times, said refresh execution unit
10 sequentially refreshes the sectors included in the refresh zone, starting at
the head sector or the final sector, and sets a second value different from
the first value in the refresh mark included in the sector.

6. The semiconductor storage device according to claim 1, wherein
each sector in said nonvolatile memory further includes a data error
detection/correction code, and

5 when refreshing the sector, said refresh execution unit writes data
corrected by using said data error detection/correction code to the sector.

7. The semiconductor storage device according to claim 1, wherein
each sector in said nonvolatile memory further includes a non-
defective sector code indicating whether the sector is defective or not, and
when refreshing the sector, said refresh execution unit suspends the

5 refresh in the case where the sector has been found to be a defective sector by referring to said non-defective sector code.

8. The semiconductor storage device according to claim 7, wherein in the case where the sector has been found to be a defective sector by referring to said non-defective sector code, said refresh execution unit refreshes another sector in said refresh zone.

9. The semiconductor storage device according to claim 7, wherein in the case where an error generates after the refresh for the sector and the sector has been found to be a defective sector by referring to said non-defective sector code, said refresh execution unit suspends the refresh.